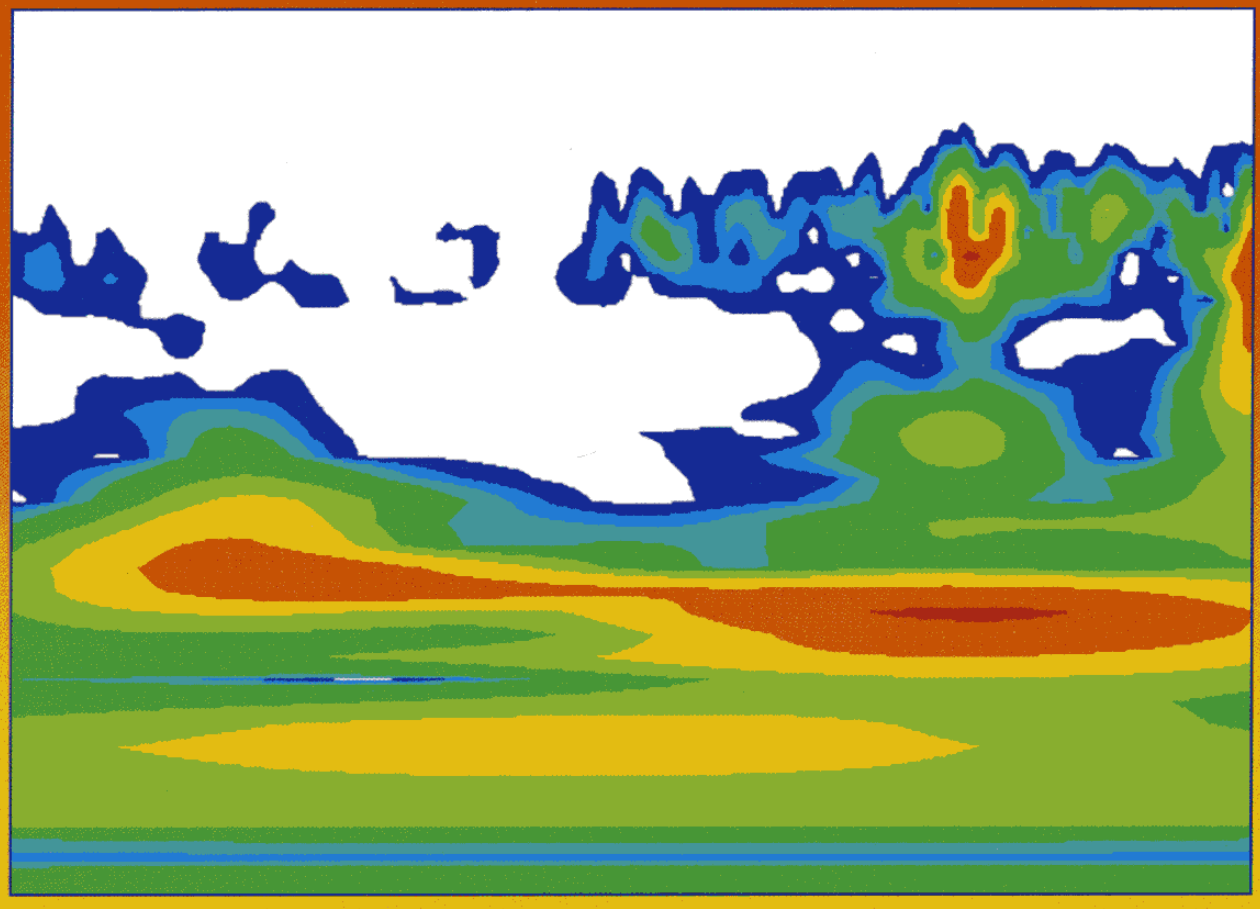
nuclear weapons journal



September/October 2003

■ Risk Management ■ LANSCE ■ First beam at DARHT-II ■
■ DANCE ■ PBX 9501 ■

Weapons Science and Engineering at Los Alamos National Laboratory

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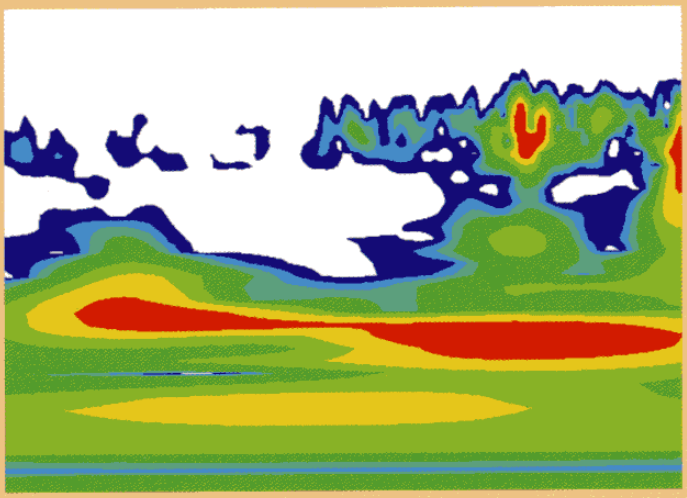

About the cover: Data from the Dual-Axis Radiographic Hydrotest Facility will play a crucial role in stockpile certification. Commissioning of the second axis is in progress: this graphic displays a frequency analysis of beam motion in one experiment during the first commissioning phase, a demonstration that the technology could produce and accelerate a beam of electrons.

Nuclear Weapons Journal highlights accomplishments in the nuclear weapons program at Los Alamos National Laboratory. *NWJ* is funded by the Weapons Physics and Weapons Engineering and Manufacturing Directorates. The Weapons Communication Team produces *NWJ* bimonthly:

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Los Alamos
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BACKWARD GLANCE

Gamow's Shields

In 1949, medieval-looking shields mysteriously appeared on the office doors of several T-Division staff members. These shields were divided into panels that bore personal, scientific, and technical artwork related to the recipient. After a brief investigation, the shields were traced to a visiting consultant, George A. Gamow.

***Robert Richtmyer**, T-Division leader from 1945–1946. Richtmyer was carrying punch card computations to new levels of sophistication (lower-left quarter). The lower-right quarter refers to his mathematical studies of Cepheid variables.*

George Gamow, along with his wife, fled the Soviet Union in 1933. In 1934, he accepted a professorship in the physics department at George Washington University. A year later, Edward Teller joined that department; together, Gamow and Teller published a number of papers on the pair theory of nuclear forces, selective thermonuclear reactions, and the origin of the great nebulae. Their first doctoral student, Charles Critchfield, later became a wartime staff member at Los Alamos. Critchfield once commented that his graduate studies were conducted in German, since it was the only language thoroughly understood by all three.

***Carson Mark**, T-Division leader in 1946. The chain reaction in the lower-left quarter contains the names of the members of the division. The lower-right quarter refers to Mark's large family and numerous cats.*

Gamow, who remained a Russian citizen, did not get involved in defense work during World War II. Rather, he turned his attention to stellar evolution and focused on defining what happens to stars whose central regions are depleted of hydrogen. In part because of his work in this field, T-Division made him a consultant to the growing Super program. The shields, of which only four survive in photographs, began appearing shortly after his arrival.

James Tuck rescued his shield as well as those of Carson Mark, Robert Richtmyer, and Edward Teller before the old T-Division Building fell to the onslaught of a bulldozer. After having the shields reproduced, Tuck returned the shields to their owners. It is not known if any survive. ✹

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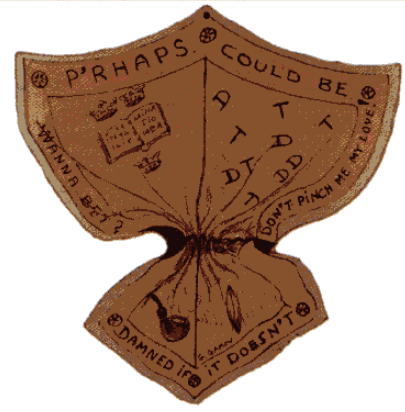

***James Tuck**, T-Division leader in charge of controlled thermonuclear research in 1951. The "perhaps" and "pinch" refer to the "Perhapsatron" toroidal pinch device. The lens in the lower-right quarter refers to the explosive lens used in the first fission bomb.*

***Edward Teller**. Superman in the upper-left quarter refers to Teller's theoretical studies of devices involving thermonuclear burning—code-named "Super" at Los Alamos in the 1940s. The inscription refers to a blocked door in Teller's office, through which visitors were apt to try to enter.*